

REMARKS/ARGUMENTS

The Changes

Claim 1, the only independent claim, has been changed to better define the disclosed invention as a system for stabilizing a floating catenary anchor leg mooring system. This change has been carried through the remaining dependent claims.

Claim 3 has been canceled, and the limitations formerly contained in Claim 3 have now been included in Claim 1.

The First Rejection

Claims 1-5 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as their invention. Specifically, the Examiner points out the lack of antecedent basis for the phrase, "said shallow draft hull portion," in the first claim.

Response to the First Rejection

The antecedent basis problem in the first claim has been corrected by deletion of the words, "shallow draft," from the third element. It may now be seen that the proper antecedent basis for the cylindrical hull portion appearing in the third element of Claim 1 now appears in the second element of Claim 1.

The Second Rejection

Claims 1 and 3 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,431,589 to Corona.

35 U.S.C. 132 Rationale

In the opinion of the United States Patent and Trademark Office, the Corona '589 reference discloses a catenary anchor leg mooring system, including a hollow buoy 16, which includes a cylindrical hull portion having a center of gravity which is below the sea surface, ballast compartments 90 having a portion below the sea surface and means for providing a path for oil to travel from subsea reservoirs.

Response to the Second Rejection

A close reading of the Corona '589 reference will reveal that both the Corona '589 reference and the disclosed invention address the problem of stabilizing a floating buoy; however, this stabilization of the floating buoy is accomplished in an entirely different manner. Specifically, the Corona '589 reference addresses the problem of stabilization of the buoy by actually submerging the entire buoy. In the buoy described in the instant application, that stabilization is accomplished by utilizing ballast compartments which are constructed and arranged to adjust the natural pitch and roll periods of the hollow buoy assembly to reduce the pitch and roll of the floating buoy in response to wind and wave forces.

There is no mention of using ballast compartments for the purpose of adjusting the natural pitch and roll periods of the hollow buoy assembly to reduce the pitch and roll of the buoy in response to wind and wave forces in the Corona '589 reference.

A close reading of those portions of the Corona '589 reference which refer to stabilization of the buoy reveals the essential differences between the way the buoy disclosed in the Corona '589 reference operates and the way the buoy disclosed in the instant invention operates.

At Column 3, lines 41-42, the Corona '589 reference teaches: "The body 26 has a controllable buoyancy, as will be described in further detail herein...."

Later, in Column 4, at lines 3-7, the Corona '589 reference teaches how the controllable buoyancy operates. Specifically: "Figure 2 shows the buoy 16 in an alternate submerged position, as indicated by the dashed lines, when not in use and in severe sea state conditions, ice accumulation and ice movement are experienced in the anchorage 10."

The operation of the buoy described in the Corona '589 patent between a floating condition and a submerged condition is confirmed at Column 4, lines 30-33, wherein it is stated: "Operation of the buoy 16 to move between a floating and submerged condition as carried out by a combined operation of floating suitable ballast compartments within the buoy...."

Finally, the two-position operation of the buoy described in the Corona '589 reference is confirmed at Column 7, lines 35-42, wherein it is indicated that: "Suitable controls, not shown,

may be operated to control the flooding of tanks or compartments 168, 170, 172 and 174 as well as additional ballast tanks 160, 162 and 166, if needed, to control the buoyancy and stability of the buoy 16 as it moves between a working position on the surface 17 and the submerged position.”

The system for stabilizing a floating catenary anchor leg mooring system as described in the instant application is based around the use of a hollow buoy assembly. However, the hollow buoy assembly is not one that has a first position on the surface of the water and a second position submerged below the surface of the water. Rather, the buoy used a floating catenary anchor leg mooring system as disclosed in the instant application does not need to be submerged to control its movement, as that control of buoy movement is provided by a ballast compartment which is constructed and arranged to be adjustable to the natural pitch and roll periods of the hollow buoy assembly. The buoy described in the Corona ‘589 reference contains no such ballast compartment which is designed to address to the natural pitch and roll periods of a hollow buoy assembly portion.

The Third Rejection

Claims 2, 4, and 5 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,431,589 to Corona, in view of U.S. Patent No. 4,501,525 to Grundy, *et al.*

35 U.S.C. 132 Rationale

In the opinion of the United States Patent and Trademark Office in the Corona '589 reference does not disclose the type of ballast used in his chamber at 90. The use of seawater is well known to be a ballasting element. The Grundy *et al.* '525 reference discloses a mooring buoy which is similar to that of the Corona '589 reference and teaches forming a buoy with a configuration having a diameter which is greater than twice its height. In view of these disclosures, in the opinion of the United States Patent and Trademark Office, it would have been obvious to one skilled in the art to make the buoy as taught by the Corona '589 reference with a configuration having a diameter twice as large as the height of the buoy generally, as taught by the Grundy *et al.* '525 reference. Further, to use seawater as the ballast component 90 in the buoy taught by the Corona '589 reference, would have been an obvious matter of design choice to one skilled in the art.

Response to the Third Rejection

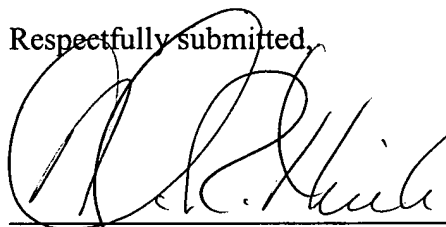
While the Applicants do not argue with the assertion of the United States Patent and Trademark Office that the buoy described in the Grundy *et al.* '525 reference does appear to have a diameter twice as large as the height of the buoy, there is nothing in the Grundy *et al.* '525 reference which specifically addresses the problem of stabilization of a hollow buoy assembly. Further, the buoy described in the Grundy *et al.* '525 reference requires the use of a replaceable bursting disk 50 and electronic equipment, such as a radiographic signal transmitter 56 to serve its function. Such equipment would not be compatible with a buoy such as described

in the Corona '589 reference which has a first position on the surface and a second submerged position below the surface. Accordingly, the Corona '589 reference and the Grundy *et al.* '525 reference are not properly combinable and do not form suitable combination upon which to base an obviousness rejection of Claims 2, 4, and 5.

CONCLUSION

The claims, as now amended, are in a condition for allowance. Such action, upon reconsideration of the pending application by the Examiner, is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'A. R. Thiele', written over a horizontal line.

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Attachments